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Lieut.-General J. F. TENNANT, C.I.E., R.E., F.R.S., President, in the Chair.

The Rev. John Mitchell, B.D., 57 Parkgate Road, Chester, was balloted for and duly elected a Fellow of the Society.

Lewis Boss, Dudley Observatory, Albany, N.Y., U.S.A.;
A. Cornu, Paris; and
C. Souillart, Lille,

were balloted for and duly elected Associates of the Society.

The following candidates were proposed for election as Fellows of the Society, the names of the proposers from personal knowledge being appended:—

George Price Blackwood Hallowes, Surveyor of the Post Office, 77 Lansdowne Road, Didsbury, Manchester (proposed by E. J. Spitta);

Shin Hirayama, Astronomer at the Tokyo Observatory, Japan (proposed by W. H. M. Christie);

Robert John Pearce, M.A. Cantab., Hon. D.C.L. Durham, Professor of Mathematics in Durham University (proposed by the Rev. T. E. Espin);

John M. Stone, St. John's College, Cambridge (proposed by the Rev. A. Wrigley).

Seventy-two Presents were announced as having been received since the last meeting, including, among others,

Ahmed Mukhtar Pasha, The Reform of the Calendar (in the original Turkish), presented by Sir J. W. Redhouse.

Celestial photographs taken at the Sydney Observatory, presented by H. C. Russell.

Observations of the Spectra of Sun-spots in the Region B—D made at the Stonyhurst College Observatory in the years 1882–89. By the Rev. A. L. Cortie, S.J.

(*Communicated by E. W. Maunder.*)

(*Abstract.*)*

The paper contains the results derived from the detailed study of the spectra of ninety Sun-spots in the region B—D. The observations were made after the plan followed at Greenwich, and the instrument employed was the Browning automatic spectroscope, generally with a dispersion of twelve prisms of 60° attached to the 8-inch equatoreal.

In the discussion the observations are divided into two periods, the first embracing the disturbed period of solar activity from 1882 till the autumn of 1886; and the second, called the quiet period, that from the autumn of 1886 till June 1889.

The widening of the lines has, as far as possible, been reckoned in tenths of the normal breadth of the lines. For the sake of comparison of the observations among themselves, two standards have been chosen, and a line widened between the limits 0·5 and 1·0 of its normal breadth is called a "more widened line," and that widened 1·0 or more a "most widened line." Lines below 0·5 are simply "widened." A long table gives the mean widening of nearly three hundred lines between B and D, both for the disturbed and the quiet period. Any interesting points about the lines are noted in a column headed "Remarks."

The main conclusions deduced from the discussion of these observations may be summarised as follows:—

1. The general absorption due to a spot occasionally varies in intensity in different portions of the spectrum. Two or three times it has been so dark at the red end as to partially mask the selective absorption of the lines. The spot-bands observed in 1885 and the first half of 1886 have not been seen in any spot observed from the autumn of 1886 to the autumn of 1890.

2. Of fifty-three iron lines occurring in this part of the spectrum, in the disturbed period only one had a mean widening placing it among the more widened lines.

3. In a total of 1,228 observations, the large majority having been taken in the disturbed period, only three in the disturbed period, and fourteen in the quiet period, placed iron lines among the most widened lines.

4. In the quiet period many more iron lines appeared among the more widened lines than in the disturbed period. Comparing the totals, 126 observations in 1885, and 127 in 1889, only three times in the former year was iron among the more widened lines, against eighty-one times in the latter year.

* To be published in the *Memoirs*, vol. l.